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7 June 1955

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MEMORANDUM FOR: THE RECORD

SUBJECT: Ultrasonic Thickness Gauge for Masonry (AMP #25)

The requirement for an ultrasonic thickness gauge for measuring the thickness of concrete, brick, tile or other masonry walls was discussed with Mr. William B. Wildhack, Director, Office of Basic Instrumentation, National Bureau of Standards. He advised that while such equipment was probably feasible, it was not commercially available at this time. The currently available equipment operates in the 70-100 kc frequency range and is applicable to homogenious materials. The attenuation of 70-100 kc energy in concrete and so forth prohibits the use of this equipment on thicknesses greater than 8" to 12". This equipment has been used successfully, however, to determine "voids" in concrete roadbeds with considerable success. However, the measurement is relative rather than absolute.

Mr. Wildhack suggested that equipment capable of measuring thickness of non-homogenious masonry walls varying in thickness from 8" to 4' was practical with an operating frequency of 20-23 kc; however, this equipment would also present a relative rather than absolute measurement because of the non-homogenious nature of the masonry material. Mr. Wildhack indicated that simple experiments to determine the accuracy of such equipment could be performed with the use of signal generators and oscilloscope and magneto striction nickel rod transducers. He also suggested employing silicone putty as a transducer to wall bonding material.

The undersigned feels that the Office of Basic Instrumentation, National Bureau of Standards might be interested in doing a limited study in connection with this project and suggests a formal request to be made to Mr. Wildhack.

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